Listing of Claims

1. (Currently Amended)   A method of tomographic imaging, and particularly a CT or MR method, for repetitively producing diagnostic slice images of a part of a patient's body, having the following method steps:

a)   making of current reference slice images (1) of the part of the body,

b)   determination of a geometrical transformation (2) by which the current reference slice images (1) are brought into agreement with earlier reference slice images (3) of the part of the body,

c)   calculation of current imaging parameters (5) by transforming earlier imaging parameters by means of the geometrical transformation (2) determined in step b),

d)   making of a current diagnostic slice image (6), the position and orientation in three dimensions of the image plane of the diagnostic slice image (6) being determined by the current imaging parameters (5) calculated in step c),

~~characterized in that~~wherein there are made in step a) of the method at least two current reference slice images (1, 1') whose image planes are preset in such a way that their relative positions and orientations (7) in three dimensions agree with the relative positions and orientations (8) in three dimensions of the earlier reference slice images (3, 3'), and in that the geometrical transformation (2) is determined in step b) in such a way that, by it, all the current reference slice images are brought into agreement with the corresponding earlier reference slice images simultaneously.

2. (Currently Amended)   A method as claimed in claim 1, ~~characterized in that~~wherein the geometrical transformation (2) is determined in step b) of the method by identifying reference points in the current reference slice images (1, 1') that agree with corresponding reference points in the earlier reference slice images (3, 3').

3. (Currently Amended)   A method as claimed in claim 1, ~~characterized in that~~wherein the geometrical transformation (2) determined in step b) of the method is a rigid or an affine transformation that is defined by a set (4) of transformation parameters, the set (4) of transformation parameters being determined automatically by, by means of a suitable algorithm, optimizing a measure of similarity that represents the similarity of the current reference slice images (1, 1') to the corresponding earlier ones (3, 3').

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4. (Currently Amended)   A method as claimed in claim 1, ~~characterized in that~~wherein a plurality of parallel reference slice images ~~(14, 15, 16)~~ are made in each of the head-foot, anterior-posterior and right-left directions in step b) of the method, the image resolution being selected to be higher in the image planes than perpendicularly thereto.

5. (Currently Amended)   A computer program for performing the method claimed in claim 1, which automatically determines imaging parameters by which the position and orientation in three dimensions of the image plane of a diagnostic slice image ~~(6)~~ are determined, so doing by

a)   receiving current image data for current reference slice images ~~(1)~~ and earlier image data for earlier reference slice images ~~(3)~~ as an input,

b)   determining a geometrical transformation ~~(2)~~ by which the current image data is brought into agreement with the earlier image data,

c)   calculating the current imaging parameters ~~(5)~~ by transforming earlier imaging parameters by the geometrical transformation ~~(2)~~ determined in step b),

            ~~characterized in that~~wherein the input in step a) comprises current and earlier image data for, in each case, at least two current ~~(1, 1')~~ and earlier reference slice images ~~(3, 3')~~, and in that, in step b), the geometrical transformation ~~(2)~~ brings the image date for all the current reference slice images ~~(1, 1')~~ into agreement with the image data for the corresponding earlier reference slice images ~~(3, 3')~~ simultaneously, a set ~~(4)~~ of transformation parameters defining the geometrical transformation being determined by, by means of a suitable optimizing algorithm, maximizing a measure of similarity that represents the similarity of the current image data to the corresponding earlier image data.

6. (Currently Amended)   A tomographic imaging unit (9) having image-making means (10) that make diagnostic slice images (6), and having a computer (11) that operates the image-making means (10) and for this purpose calculates imaging parameters (5) that determine the particular positions and orientations in three dimensions of the image planes of the diagnostic slice images (6), characterized in that the computer (11) is so set up in respect of software that the making of the diagnostic slice images (6') takes place by the method claimed in claim 1.